

theoretically from considering the poles as centres of attraction and repulsion; but I have not found the statement borne out by other experiments (241); and in the one quoted by him the effect was doubtless due to some of the many interfering causes of variation which attend such investigations.

237. A glass vessel had a platina plate fixed perpendicularly across it, so as to divide it into two cells: a head of mica was fixed over it, so as to collect the gas it might evolve during experiments; then each cell, and the space beneath the mica, was filled with dilute sulphuric acid. Two poles were provided, consisting each of a platina wire terminated by a plate of the same metal; each was fixed into a tube passing through its upper end by an air-tight joint, that it might be moveable, and yet that the gas evolved at it might be collected. The tubes were filled with the acid, and one immersed in each cell. Each platina pole was equal in surface to one side of the dividing plate in the middle glass vessel, and the whole might be considered as an arrangement between the poles of the battery of a humid decomposable conductor divided in the middle by the interposed platina diaphragm. It was easy, when required, to draw one of the poles further up the tube, and then the platina diaphragm was no longer in the middle of the humid conductor. But whether it were thus arranged at the middle, or towards one side, it always evolved a quantity of oxygen and hydrogen equal to that evolved by both the extreme plates.<sup>1</sup>

238. If the wires of a galvanometer be terminated by plates, and these be immersed in dilute acid, contained in a regularly formed rectangular glass trough, connected at each end with a voltaic battery by poles equal to the section of the fluid, a part of the electricity will pass through the instrument and cause a certain deflection. And if the plates are always retained at the *same distance from each other* and from the sides of the trough, are always parallel to each other, and uniformly placed relative to the fluid, then, whether they are immersed near the middle of the decomposing solution, or at one end, still the instrument will indicate the same deflection, and consequently the same electric influence.

239. It is very evident, that when the width of the decom-

posing conductor varies, as is always the case  
when mere wires  
or plates, as poles, are dipped into or are  
surrounded by solution,

<sup>1</sup> There are certain precautions, in this and such  
experiments, which can  
only be understood and guarded against by a knowledge of  
the phenomena  
<to be described in the first part of the Fourth Part of  
these Researches.